1.0 INTRODUCTION

1.1 Background

1.1.1 Project Location

The Mississippi River Ship Channel (MRSC), Gulf to Baton Rouge, LA, project is a deep draft navigation channel, providing deep draft navigation access to ports located along the Mississippi River in Southeast Louisiana. The project area begins near Baton Rouge, LA, at river mile (RM) 232.4 above head of passes (AHP) and extends to the Gulf of Mexico, ending at RM 22 below head of \passes (BHP) (Figure 1-1). The channel services four of the top ten ports in the United States: the Port of Greater Baton Rouge (Port of Baton Rouge), the Port of South Louisiana, the Port of New Orleans, and the Plaquemines Port, Harbor and Terminal District (Port of Plaquemines). The Port of South Louisiana is the largest port in the nation in terms of tonnage.

Figure 1-1 Project Location

The MRSC consists of three routinely dredged reaches to allow for navigation. The first reach is located in the lower Mississippi River reach, and extends from RM 13.4 AHP to RM 22 BHP. This reach includes the portion referred to as Southwest Pass which extends from RM 0 (Head of Passes) to RM 22 BHP (Figure 1-2). This reach is located down river from the jurisdictional limits of the Port of Plaquemines, which jurisdictional limits extend from RM 0 to RM 81.2 AHP.

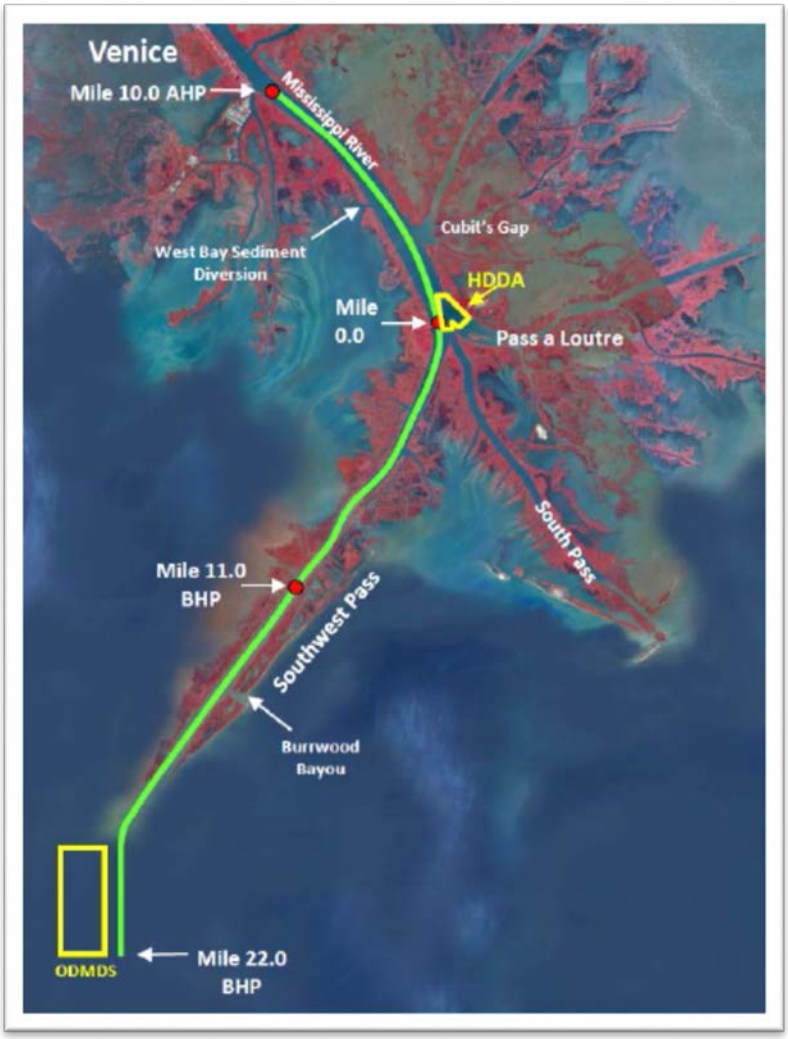

Figure 1-2 Lower Mississippi

The second reach, lies within the jurisdictional limits of the Port of New Orleans which extends between RM 81.2 AHP and RM 114.9 AHP (Figure 1-1). This portion of the MRSC is in excess of the authorized depth of 55 ft and does not require routine dredging. The New Orleans Harbor is located within this reach and is maintained and dredged under operation and maintenance of the MRSC. The Rivers and Harbor Act of 1962 included deepening portions of the Port of New Orleans to a depth of 40 ft MLG. However the 1981 Chief's Report and subsequent 1985

Supplemental Appropriations Act did not include authority to deepen the Port of New Orleans beyond the previously authorized 40 ft. Therefore, evaluation of deepening of the Harbor is not included in the alternatives.

The third reach is from RM 115 AHP to RM 232.4 AHP, immediately downstream of the US Highway 190 Bridge in Baton Rouge. The reach consists of crossings (locations where the channel crosses the river between bendways). Of the crossings, 12 require routine maintenance dredging. Three crossings, Fairview, Belmont, and Richbend, lie within the footprint of the Port of South Louisiana, which extends from RM 115 AHP to RM 168.3 AHP, and the remaining 9 crossings are within the footprint the Port of Baton Rouge, which extends from RM 168.3 AHP to RM 232.4 AHP (Figure 1-3).

While Baton Rouge Harbor Devil Swamp Louisiana, is located near proximity of the upstream limit of this project, it is outside the scope of this study.

Figure 1-3 Twelve crossings which require regular maintenance

The three reaches as described above are dredged annually to maintain deep draft navigation. The portions of the river in between RM 13.4 AHP to RM 115 AHP, and in between the crossings historically have depths in excess of 55 ft. Evaluation indicated this will remain the case through

the period of analysis. These reaches are not considered in the development and evaluation of alternatives for this general reevaluation study. If future conditions result in changes in this condition, an economic and environmental analysis and reassessment of the project will be needed. In the event the navigation industry indicates a need, hydrographic surveys may be required to determine if shoaling will prevent safe passage of ships. However, this is not a routine scheduled activity, and is only performed as needed. If the surveys indicate shoaling is limiting the channel depth or width then dredging may be required, however dredging in these reaches has not been required in the last 10 years.

The map "Mississippi River Ship Channel" (EGIS Map ID 17-005-001 included in the Map Annex) illustrates the sections of the river which are naturally deep, compared to those that are routinely dredged. The maps are based on the hydrographic surveys taken over a year from September of 2012 to September of 2013. The hydrographic surveys reflect the thalweg, the deepest point, of the MRSC at a discreet point in time. The channel depth, at any given point, may vary throughout the year and may vary across the channel depending on the existing side slopes.

1.1.1 Project Authority

The following provides a summary of pertinent project authority and decision documents.

River and Harbor Act of 1925: The project, "Mississippi River, Louisiana Between Baton Rouge and New Orleans," described in the report of the Chief of Engineers published as House Document No. 105, Sixty-Ninth Congress was authorized by the River and Harbor Act of 1925. The act provided for a 35 foot by 300 foot channel in the river below Baton Rouge, Louisiana.

The River and Harbor Act of 1937: This act authorized the project entitled "Mississippi River at and Near New Orleans, Louisiana," as described in the report of the Chief of Engineers, published as House Document No 597, 75th Congress. The act provided for a 35 foot by 1000 foot channel between the lower limits of the Port of New Orleans and Head of Passes on the Mississippi River; a 35 foot by 1,500 foot channel through the Port of New Orleans; and a 35 foot by 500 foot channel between Baton Rouge and New Orleans.

The River and Harbor Act of 2 March 1945, 76th Congress, 1st Session:, This act authorized the Mississippi River Baton Rouge to the Gulf of Mexico, Louisiana project. The act provided for: the construction of a 35 ft LWRP (Low Water Reference Plane) by 500 foot channel between Baton Rouge and New Orleans; a 35 foot MLG (Mean Low Gulf) by 1,500 channel within the Port of New Orleans; a 40 foot MLG by 1,000 foot channel from the lower limits of the Port of New Orleans to Head of Passes; a 40 foot MLG by 800 foot wide channel in Southwest Pass; a 40 foot M.L.G. by 600 foot channel in Southwest Pass Lower Jetty and Bar Channel; a 30 foot MLG by

450 foot channel in South Pass; and a 30 foot MLG. by 500 foot channel in South Pass Bar Channel.

The River and Harbor Act of 1962, Public Law 87-874:, This act authorized the channel from Baton Rouge to the upper limits of the Port of New Orleans to a depth to 40 ft and construction of a 40 ft by 500 ft channel within the existing 35 ft by 1,500 ft channel within the limits of the Port of New Orleans and through the upper limit of the project located at Devil's Swamp, La (Baton rouge Harbor).

The Feasibility Report titled Deep-Draft Access to the Ports of New Orleans and Baton Rouge, Louisiana, dated July 1981: This feasibility report re-evaluated the existing Mississippi River navigation channel between Baton Rouge, Louisiana and the Gulf of Mexico. The report recommended deepening the Mississippi River navigation channel to a 55 ft depth from Baton Rouge to the Gulf of Mexico, with the exception of that portion of the project within the Port of New Orleans.

The Report of the Chief of Engineers, titled Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana, dated April 9, 1983 (herein referred to as 1983 Chief's Report) identified the following key features of the project:

- enlarging the existing 40 ft channel in the Mississippi River from Head of Passes (mile 0) to the Port of Baton Rouge (mile 233.0) to a project depth of 55 ft over a bottom width of 750 ft;
- constructing a turning basin at the upstream end of the enlarged channel in Baton Rouge with a project depth of 55 ft over a bottom width of 1,600 ft and a length of 4,000 ft;
- constructing training works in South Pass and Pass a Loutre to redistribute flows to Southwest Pass to reduce its maintenance dredging requirements (Note, that this feature has been extensively revised as a result of post-authorization studies);
- enlarging the existing 35-foot channel along the left descending bank of the Mississippi River in the New Orleans Harbor, between mile 86. 7 and 104.5, to a project depth of 40 feet over a varying bottom width; and
- constructing various measures to mitigate for increased saltwater intrusion, including but not limited to, the construction of a sill on the river bottom during periods of low water, a water intake extension and various other improvements in the water supply system in Plaquemines Parish, Louisiana.

The 1985 Supplemental Appropriations Act: authorized the project for construction as follows:

> "…the Secretary of the Army acting through the Chief of Engineers is authorized and directed to proceed with planning, design, engineering, and construction of the following projects substantially in accordance with the individual report describing such project as reflected in the Joint Explanatory Statement of the Committee of Conference accompanying the Conference Report for H.R. 2577…Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana…*Provided further*, That the funds appropriated herein shall lapse on June 30, 1986, if the agreement required herein for that project has not been executed..."

As recommended in the 1983 Chief's Report and as authorized in the 1985 Act, no provision was made for the required cost-sharing of the project.

The Water Resources and Development Act of 1986 (PL 99-662): Section 101 specified the cost sharing attributable to the construction, operation, maintenance, repair, replacement and rehabilitation (OMRR&R) of general navigation projects, such as the MSRC.

Cost Sharing Construction:

> "Payments During Construction: The non-Federal interests for a navigation project for a harbor or inland harbor, or any separable element thereof, on which a contract for physical construction has not been awarded before the date of enactment of this Act shall pay, during the period of construction of the project the following costs associated with general navigation features…(c) 50 percent of the cost of construction of the portion of the project which has a depth in excess of 45 feet."

Cost Sharing of Operation and Maintenance:

> "The Federal share of the cost of operation and maintenance of each navigation project for a harbor or inland harbor constructed pursuant to this Act shall be 100 percent, except that in the case of deep-draft harbor, the non-Federal interest shall be responsible for an amount equal to 50 percent of the excess of the cost of the operation and maintenance of such project over the cost which the Secretary determines would be incurred for operation and maintenance of such project if such project had a depth of 45 feet."

Although the Department of the Army did timely execute an Agreement for Local Cooperation with the State of Louisiana on June 30, 1986 for Phase I (Depth enhancement of 45 feet to Mile 181) of the Mississippi River Ship Channel Project From Baton Rouge, Louisiana to the Gulf of Mexico, Congress re-authorized the project.

Section 201(a) of the Water Resources Development Act of 1986 provided reauthorization of the project as :

Section 201_-- Harbor Development, Deep Draft Harbor Projects, Authorization for Construction:

> "(a) The following projects for harbors are authorized to be prosecuted by the Secretary substantially in accordance with the plans and subject to the conditions recommended in the respective reports designated in this subsection, except as otherwise provided in this subsection:…
>
> MISSISSIPPI RIVER SHIP CHANNEL, GULF TO BATON ROUGE, LOUISIANA. The project for navigation, Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana: Report of the Chief of Engineers, dated April 9, 1983, at a total cost of $471,000,000 with an estimated first Federal cost of $178,000,000 and an estimated first non-Federal cost of $293,000,000."

Section 2102(b) of the Water Resource Reform and Development Act of 2014, Public Law 113-121: This Public Law amended the cost-sharing requirements of Section 101(b)(1) of WRDA 1985 by increasing the depth at which operation and maintenance of a navigation requires a non-Federal cost share from 45 feet to 50 feet.

A general reevaluation study was conducted under the existing construction authorities and the results are presented in this integrated general reevaluation report (GRR) and supplemental environmental impact statement (SEIS). A GRR supports a post authorization change, and may be necessary if a significant period has elapsed or conditions have changed significantly since the feasibility study was completed. A general reevaluation study is a reanalysis of previously completed study, using current planning criteria and policies, which is required due to changed conditions and/or assumptions. The results may affirm the previous plan, reformulate and modify it, or find that no plan is currently justified.

1.1.2 Project Implementation

The 1983 Chief's Report recommended staged construction of the project:

> "Staged Construction of the project would provide a sensible and affordable approach to implementation and earlier realization of the benefits. Such a construction sequence would also minimize disruption of navigation and allow for a gradual increase in the dredging program."

During the pre-construction planning, a construction sequence was developed that would implement the authorized project in three construction phases, to obtain the fully authorized

project. Construction of Phase I was completed in December of 1987 and provided a depth of 45 ft from Donaldsonville, LA, (RM 181.0) to the Gulf of Mexico. Construction of Phase II completed in December 1994, involved deepening of the MRSC to a depth of 45 ft between Donaldsonville, LA, (RM 181.0) to Baton Rouge, LA (RM 232.2), and included dredging eight river crossings to an equivalent depth.

Phase III, which as of publication of this report is not constructed, was originally defined as deepening of the MRSC from Baton Rouge to the Gulf of Mexico from a depth of 45 ft to a depth of 55 ft.

1.2 Purpose and Scope

Prior to proceeding with construction of Phase III, a general reevaluation study and an accompanying GRR, and supplemental environmental impact statement (SEIS) is required due to potential changed conditions and assumptions related to the MRSC depth, economic development, and environmental assessments since the 1981 report. The GRR presents the results of the general reevaluation study conducted as a reanalysis of the previously completed study using current planning criteria and policies. An evaluation of population growth trends and trade forecasts and examination of the current port capacities is required to determine if there is continued economic justification for deepening the channel. The general reevaluation study may affirm the project as previously authorized, may result in reformulation or modification of the project, or find that no plan is currently justified.

The general reevaluation study will examine whether navigation improvements to deepen the existing Federal project for the MRSC are warranted and in the Federal interest. This will be accomplished by assessing existing and future conditions; evaluating related problems and opportunities; developing potential alternatives and evaluating/comparing the costs, benefits, and feasibility of those alternatives; writing a supplemental environmental impact statement; and identifying a recommended plan. This GRR documents the results of the study and will serve as both the U.S. Army Corps of Engineers (USACE) Decision Document for the project and as the supplemental environmental impact statement (SEIS) for the proposed action. The GRR and SEIS updates the 1981 feasibility report and EIS, and associated Environmental Assessments (EA) prepared for the project “Deep-Draft Access to the Ports of New Orleans and Baton Rouge, Louisiana” (the project was subsequently renamed to Mississippi River Ship Channel, Gulf to Baton, Louisiana, but sometimes also referred to as Mississippi River Ship Channel, Baton Rouge, Louisiana to the Gulf of Mexico project).

The scope of the study includes evaluation of alternatives to deepen the MRSC between depths of 45 ft and 50 ft. for the next phase of construction. The evaluation of alternatives was limited to a depth of 50 ft at the request of the non-Federal Sponsor. Per USACE Engineering Regulations

(ER-1105-2-100) “For harbor and channel deepening studies where the non-Federal sponsor has identified constraints on channel depths it is not required to analyze project plans greater (deeper) than the plan desired by the sponsor.” Implementation of the next construction phase is driven by the need to safely pass Post Panamax deep draft ships (ships with a draft deeper than 39 ft, which was the limiting depth of the Panama Canal at the time of initial construction.) As of publication of this report approximately 0.5% of the vessels calling on the ports located within the MRSC have design drafts of 50 ft or greater. Consideration of implementing construction to a depth greater than 50 ft is not warranted at this time

In June 2012, the Institute of Water Resources released a report evaluating U.S. ports and discussed the ability/preparedness of these ports to accommodate deeper traffic upon completion of the Panama Canal expansion project. A key conclusion was that the ports along the Gulf of Mexico are least prepared. This confirmed what the navigation industry had been postulating. However, the LaDOTD did not immediately react due to the potential high cost of maintenance. Once WRRDA 2014 passed, relieving the NFS of the incremental cost of maintenance for a 50 ft deep channel, they sought to sign an agreement with the Corps to initiate a study regarding the next phase of construction. The Corps and the state signed an agreement that limited evaluations of alternatives and thereby any selected plan to depths not to exceed 50 ft. This depth represents a constraint upon the alternatives examined in this GRR.

Currently, the crossings in the Mississippi River are at depths of 45 ft, based on a depth below the Low Water Reference Plane (LWRP),, and the lower Mississippi River is at a depth of 48.5 ft Mean Lower Low Water (MLLW). The general reevaluation study will identify the depth that creates the greatest net benefits, up to a depth of 50 ft MLLW. At initiation, the study recognized there was a need to reevaluate the construction phasing of the project. Within the general reevaluation study, the alternative depths are limited to a depth not to exceed 50 ft. Therefore, future construction phases beyond the 3 phases originally planned are required to fully implement the authorized project.

All depths identified in the report are based on a depth below the identified hydraulic datum, and are identified as the depth followed by the reference plane. For example the nomenclature 45 ft MLLW or 45 ft LWRP, represents a depth of 45 below the MLLW or a depth of 45 ft below the LWRP. This nomenclature is applied throughout the report. A full discussion of the datums, MLLW and LWRP, and the currents depths within the MRSC is provided in Chapter 3 and in Appendix H.

1.3 Problems, Need, and Opportunities

The 1983 Chief’s Report identified the navigation problems resulting from inadequate channel depths and widths to accommodate deep draft vessels. The 1983 Chief’s report identified the need

for dry bulk carriers and tankers to light load in order to navigate the channel and reach the ports along the Mississippi, "as smaller, obsolete vessels are replaced with larger and more efficient ships; the percentage of light-loaded traffic will increase under the existing channel dimensions. There is a need to achieve higher economic efficiencies and savings in transportation costs by providing larger navigation channels to the Port of Baton Rouge and the New Orleans." That report led to the authorization to deepen the majority of the channel to 55 ft, and the implementation of the first and second phase of construction to deepen to 45 ft, with the exception of the New Orleans Harbor where the authorized depth remained at 40 ft. to the extent that depth authorized by Congress. The Chief's Report identified the MRSC as only servicing the Port of Baton Rouge and the Port of New Orleans. However, as of 1990, data provided by the Waterborne Commerce Statistics Center (WCSC), refined the ports along the MRSC to also include the Port of South Louisiana and the Port of Plaquemines. Based on change the general reevaluation study considers all four ports.

Since the completion of the 1983 Chief's Report, projections of future vessels and fleet size indicate that fleet and future vessels will continue to grow larger; therefore, the problems and needs identified in the 1983 Chief's Report still apply today. The current depths of the MRSC will not efficiently support the newest fleet of deep draft navigation traffic. The current depths of the MRSC result in the need for ships to light load. This will be further exacerbated as the fleet and vessel size continues to grow. The 1981 Feasibility Study identified the opportunity, "for a substantial savings in the transportation costs of the oceangoing cargo moving over the Mississippi River by the provision of larger access channels to the facilities in the river." As future vessel and fleet size continue to grow, the same opportunity exists today.

In addition, the general reevaluation study considers several additional problems and opportunities. During times of high shoaling in the river, the channel width in the river may decrease from >750 ft to 500 ft, resulting in additional traffic regulations due to safety concerns. High shoaling rates result in an increase in the sediment deposition, which creates maintenance inefficiencies and more frequent dredge cycles

The opportunities in the MRSC (mainly to benefit bulk vessels carrying grain and coal, tanker vessels carrying liquid petroleum, and the expanding container ship industry) include: allowing for easier maneuvering; and increasing efficiencies of operation and maintenance dredging intervals.

1.4 Purpose for Action

The MRSC project serves the only deep-draft ports on the Mississippi River, including four of the Nation's top ten ports. The channel is one of the few projects linking the heartland of the US to the coasts (Figure 1-4). The channel handles 450 million tons per year in bulk export and accounts

for 18 percent of U.S. waterborne commerce. Forecasts indicate that the U.S. will remain the single largest participant in the global grain trade and U.S. coal producers will continue to hold a marginal position in the global market. Grain producer forecasts shipping most of their exports from the center Gulf of Mexico region around New Orleans, with about one-half of the increase in grain exports transiting the Panama Canal. The Gulf Intracoastal Waterway and the Lower Mississippi River serve ports that accounted for 72 percent of inland waterborne exports in 2010. One-half of the growth in the center Gulf of Mexico bulk exports expect to use the Panama Canal. Projections indicate that the share of exports will increase over the next 10 years. Deepening the MRSC will improve national economic development benefits associated with these increases.

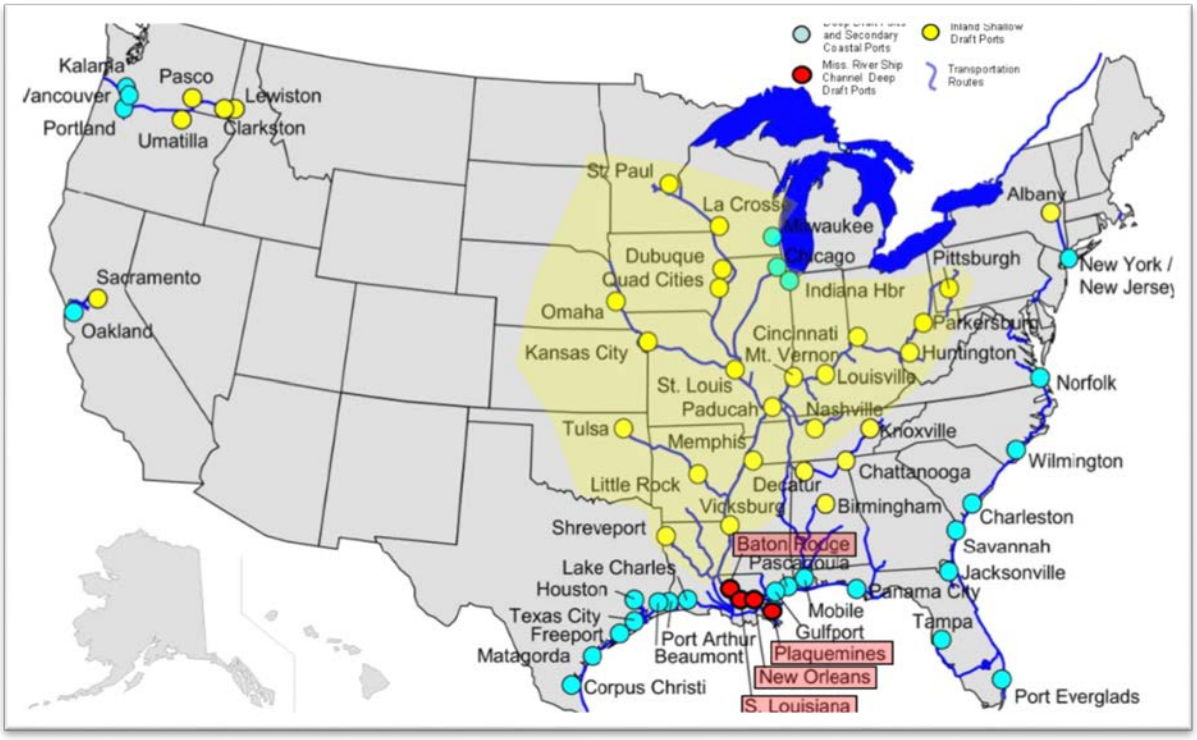

Figure 1-4 Linking the Heartland of the Coast

1.5 USACE Civil Works Guidance and Initiatives

The USACE planning process follows the six-step process defined in the Principles and Guidelines (P&G) for Water and Related Land Resources Implementation Studies. This process, used for all planning studies conducted by USACE, provides a structured approach to problem solving, and provides a rational framework for sound decision-making. The six steps are:

Step 1: Identify problems and opportunities

Step 2: Inventory and forecast conditions

Step 3: Formulate alternative plans

Step 4: Evaluate alternative plans

Step 5: Compare alternative plans

Step 6: Select a plan

This general reevaluation study started with the issuance of Federal funds to initiate a GRR, following execution of the Feasibility and Cost Sharing Agreement (FCSA), signed on the 2 April 2015. The study will terminate upon submission of the GRR to the Office of Management and Budget (OMB) by the Assistant Secretary of the Army for Civil Works (ASA (CW)) for review of consistency with the policies and programs of the President. The products of the feasibility phase include the GRR, integrated National Environmental Policy Act (NEPA) documentation, and a Chief of Engineers Report.

Incorporation of 3x3x3x SMART planning (a USACE initiative to streamline the planning process) modified the six-step planning process. On 27 October 2014, the Mississippi Valley Division (MVD) submitted guidance to Headquarters USACE (HQUSACE) documenting the concurrence of the Planning Bulletin, PB 2014-01, "Application and Compliance of SMART Planning and the 3x3x3 Rule," published 14 March 2014. On 22 October 2014, the Mississippi Valley New Orleans District (MVN), MVD, and HQUSACE discussed the MRSC, Gulf to Baton Rouge, Louisiana GRR and agreed that the Project Management Plan (PMP) for the study is compliant with the 3x3x3 rule of Planning Bulletin 2014-01.

1.6 Non-Federal Sponsor

The Louisiana Department of Transportation and Development (LaDOTD) is the non-Federal sponsor (NFS) for the project. They were an active participant in the development of the scope of the GRR and the PMP, and the Feasibility Cost Share Agreement (FCSA) executed in April 2015.

The PMP defined the scope of this general reevaluation study to consider alternatives up to a depth of 50 ft. The evaluation will consider whether Federal interest exists in implementing additional phases of construction up to a maximum depth of 50 ft. Alternatively, the study may find that the presently constructed depth of 45 ft (as constructed and maintained in Phase I and II of the project), referred to as the "no action" plan, remains the plan which best meets the Federal interest. If it is determined that deepening of the channel beyond its presently constructed and maintained depth is justified and in the Federal interest, then the GRR will identify and define the recommended plan for construction of Phase III of the project and will identify the need for future construction phases required to achieve the fully authorized 55 ft channel depth.